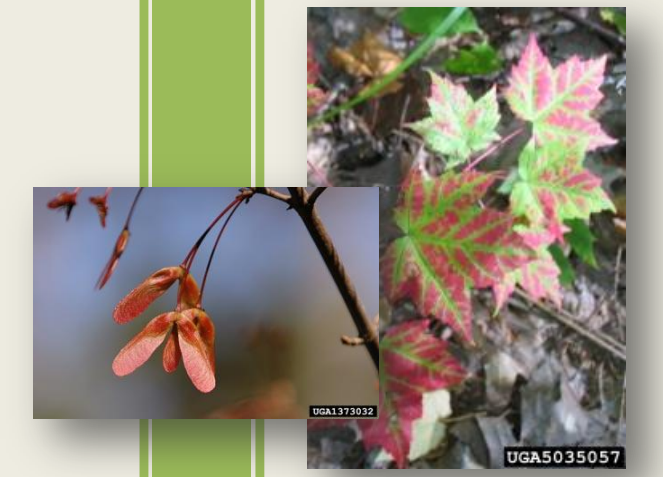


Soft maple

Red maple, *Acer rubrum*
Silver maple, *Acer saccharinum*

The **volume of soft maple has increased** significantly since 1983. Soft maple, like many other species groups is aging. The volume in large trees has more than tripled in the last two decades.

Along with volume, **the rates of growth and mortality have also increased**. But the **ratio of mortality to volume for soft maple is much lower** than the average for all species. Whereas soft maple makes up about 12% of volume and 14% of growth of trees in Wisconsin, it accounts for only 4.2% of total mortality.

Soft maple is **an important timber species**, making up 8.5% of roundwood production and 13% of all biomass.

- *How has the soft maple resource changed?*
  Growing stock volume and diameter class distribution: 1983, 1996, and 2012
- *Where does soft maple grow in Wisconsin?*
  Growing stock volume by region with map
- *How fast is soft maple growing?*
  Average annual net growth by region and year: 1983, 1996, and 2012
- *How healthy is soft maple in Wisconsin?*
  Average annual mortality by region and year: 1983, 1996, and 2012
- *How much soft maple do we harvest?*
  Roundwood production by product: 1997, 2003, and 2009
- *How much is soft maple selling for?*
  Prices for cordwood and sawtimber: 2000 to present
- *How much soft maple biomass do we have?*
  Aboveground carbon by region of the state: 2012

"How has the soft maple resource changed?"

Growing stock volume and diameter class distribution by year

The growing stock volume of soft maple in Wisconsin in 2012 was approximately 2.5 billion cft or about 11.5% of total statewide volume (Chart 1). Soft maple **volume has doubled since 1983** and increased by 27% since 1996.

The soft maple resource is increasing and maturing in Wisconsin (Chart 2). The volume in small trees (5 to 13 inches) has increased 62% since 1983 but the volume in large trees (over 13 inches) has more than tripled in the same period.

The number of soft maple trees has increased substantially, especially for sawtimber trees and for silver maple (Chart 3).

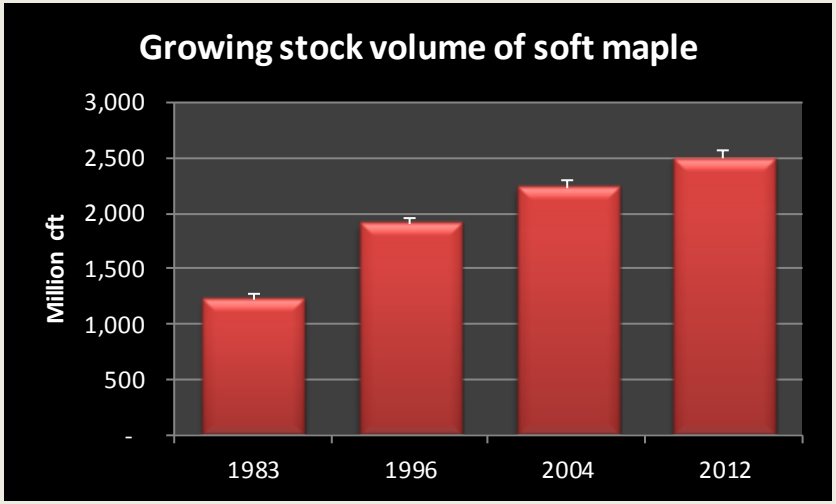


Chart 1. Growing stock volume (million cubic feet) by inventory year.
Source: USDA Forest Inventory and Analysis data: 1983, 1996, and 2012.

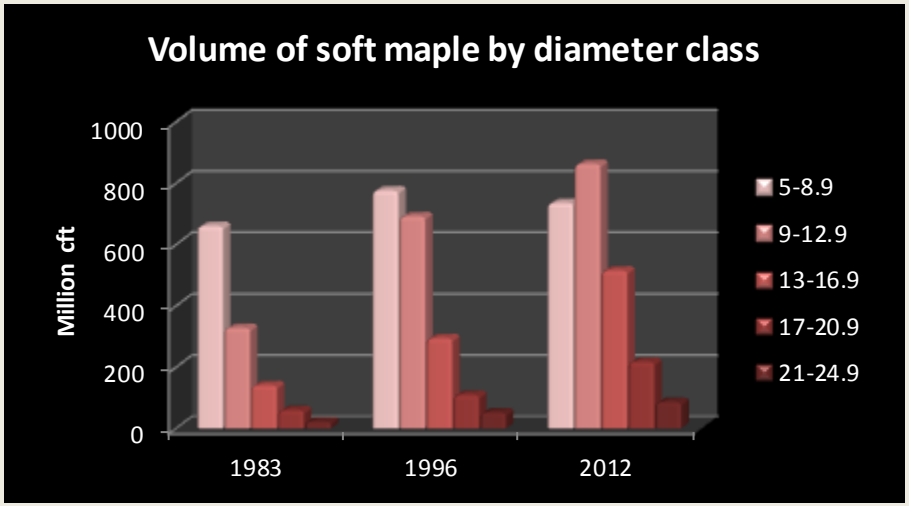


Chart 2. Growing stock volume (trees over 5 inches dbh) in million cubic feet in 1983, 1996, and 2012.
Source: USDA Forest Inventory and Analysis data: 1983, 1996, and 2012.

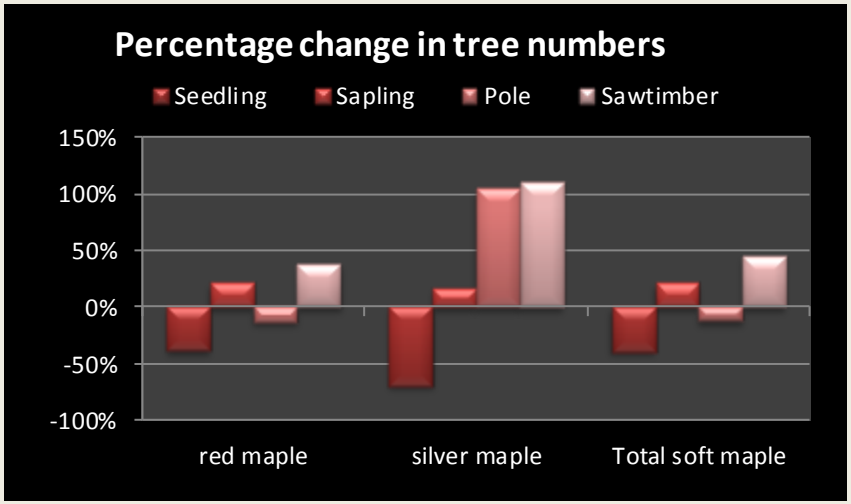
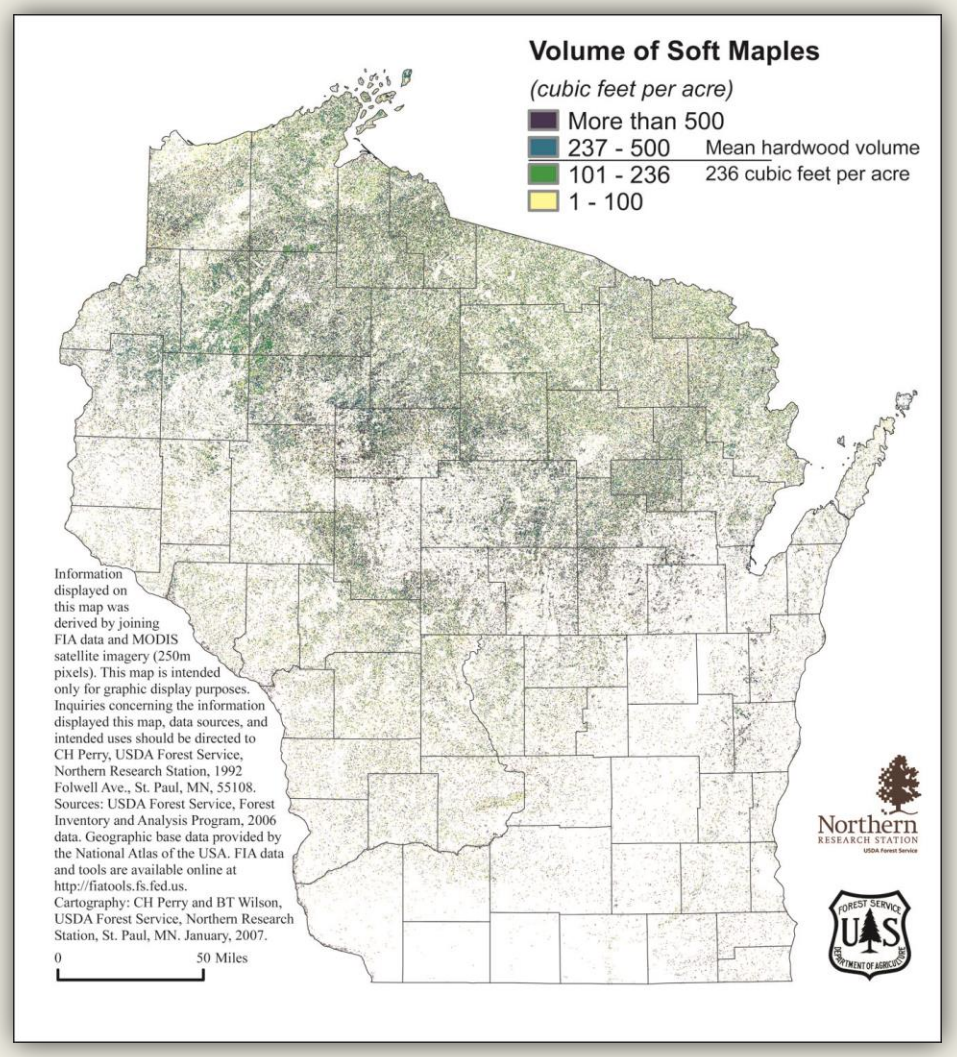


Chart 3. Percentage change in the number of live trees by size class between 1996 and 2012.
Source: USDA Forest Inventory and Analysis data 1996, and 2012.

"Where does soft maple grow in Wisconsin?"

Growing stock volume by region with map



The majority of soft maple volume, 88%, is red maple and is found in the northern and central parts of the state (Table 1). Most silver maple occurs in the southwest part of the state.

In the south, soft maple occurs mainly in the bottomland hardwood forest type and, to a lesser extent, the oak hickory type. In the north, more than half of the soft maple (mostly red maple) occurs on the maple basswood forest type.

Table 1. Growing stock volume (million cft) by species and region of the state.

Species	Central	North east	North west	South east	South west	Total	Percent of total
Red Maple	577	590	857	81	98	2,204	**88%**
Silver Maple	57	23	8	67	135	290	**12%**
Total soft maple	634	613	866	148	233	2,494	**100%**
Percent of total	**25%**	**25%**	**35%**	**6%**	**9%**	**100%**	

Source: USDA Forest Service, Forest Inventory and Analysis 2012 data

For a table on **Volume by County for 2012** go to:
http://dnr.wi.gov/topic/ForestBusinesses/documents/tables/VolumeCountySpecies.pdf

"How fast is soft maple growing?"

Average annual net growth by region and year

Average annual net growth of soft maple is about 75.0 million cft/yr, representing 13.1% of statewide volume growth (Chart 4). Growth rates have increased 44% since 1983 and 18% since 1996.

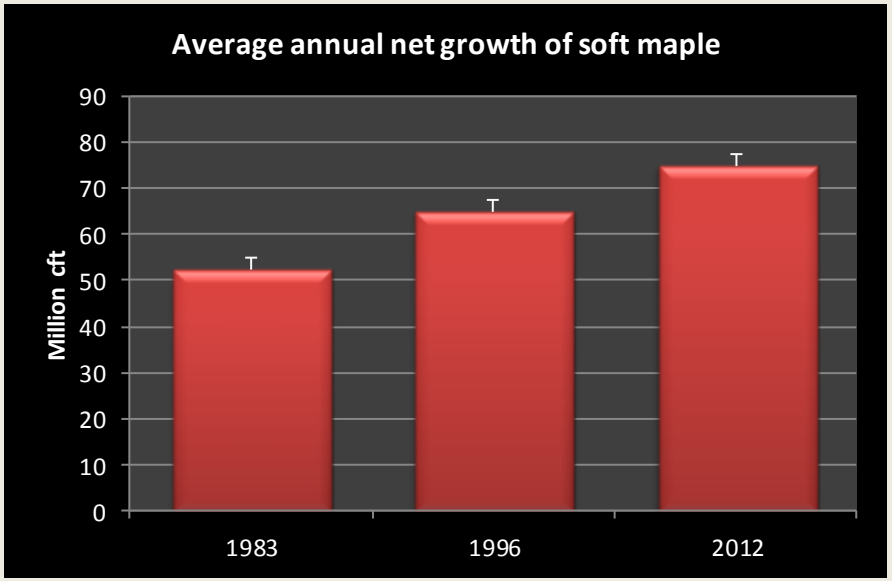


Chart 4. Average annual net growth (million cubic feet).
Source: USDA Forest Inventory & Analysis data: 1983, 1996, 2012

Table 2. Average annual net growth (million cft/year) of growing stock and the ratio of growth to volume by region of the state.

Region	Net growth	Percent of Total	Ratio of growth to volume
Central	22.9	31%	**3.6%**
Northeast	17.3	23%	**2.8%**
Northwest	21.8	29%	**2.5%**
Southeast	6.3	8%	**4.3%**
Southwest	6.7	9%	**2.9%**
Statewide	**75.0**	**100%**	**3.0%**

Source: USDA Forest Inventory and Analysis 2012

The highest volume growth for soft maple occurs in central and northern Wisconsin but the highest growth to volume ratio occurs in the southern part of the state (Table 2).

The average statewide ratio of net growth to volume for soft maple is 3.0%, slightly higher than the statewide average of 2.6% for all species.

For a table of **Average annual growth, mortality and removals by region** go to:
http://dnr.wi.gov/topic/ForestBusinesses/documents/tables/GrowthMortalityRemovals.pdf

"How healthy is soft maple in Wisconsin?"

Average annual mortality by region and year

Average annual mortality of soft maple, about 9.9 million cft per year from 2008 to 2012, has increased 98% since 1983 but has remained statistically unchanged since 1996 (Chart 5). Soft maple accounts for about 11.5% of total growing stock volume in the state but only 4.2% of total mortality.

The ratio of mortality to gross growth is 11.6% for soft maple species, **much lower than the statewide average** of 28.8% (Table 3).

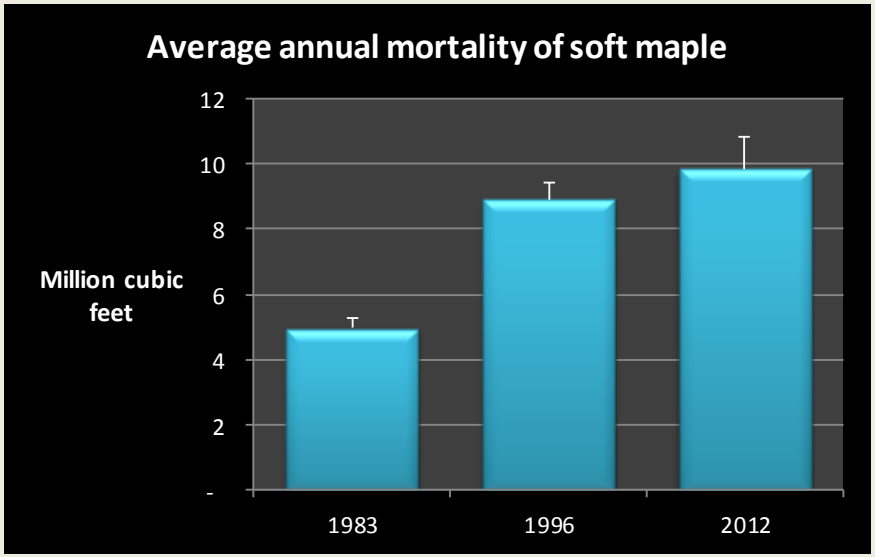


Chart 5. Average annual mortality (million cubic feet) by inventory year.
Source: USDA Forest Inventory & Analysis data: 1983, 1996, and 2012

Table 3. Mortality, gross growth, and the ratio of mortality to gross growth.

Species	Average annual mortality (cft)	Average annual gross growth (cft)	Mortality / growth
Red Maple	8,254,226	77,148,687	**10.7%**
Silver maple	1,596,347	7,715,152	**20.7%**
Total Soft Maple	9,850,573	84,863,839	**11.6%**

Source: USDA Forest Inventory & Analysis data: 2012

For a table of **Average annual growth, mortality and removals by region** go to:
http://dnr.wi.gov/topic/ForestBusinesses/documents/tables/GrowthMortalityRemovals.pdf

"How much soft maple do we harvest?"

Roundwood production by product and year

In 2009, soft maple accounted for 30.8 million cft or about 8.5% of Wisconsin's total roundwood, down 30% from 2003. Fuelwood which makes up 22% of soft maple roundwood has more than doubled (Chart 6).

From 2003 to 2009, pulpwood decreased by 41%. It now accounts for 63% of soft maple roundwood and 12% of all pulpwood produced.

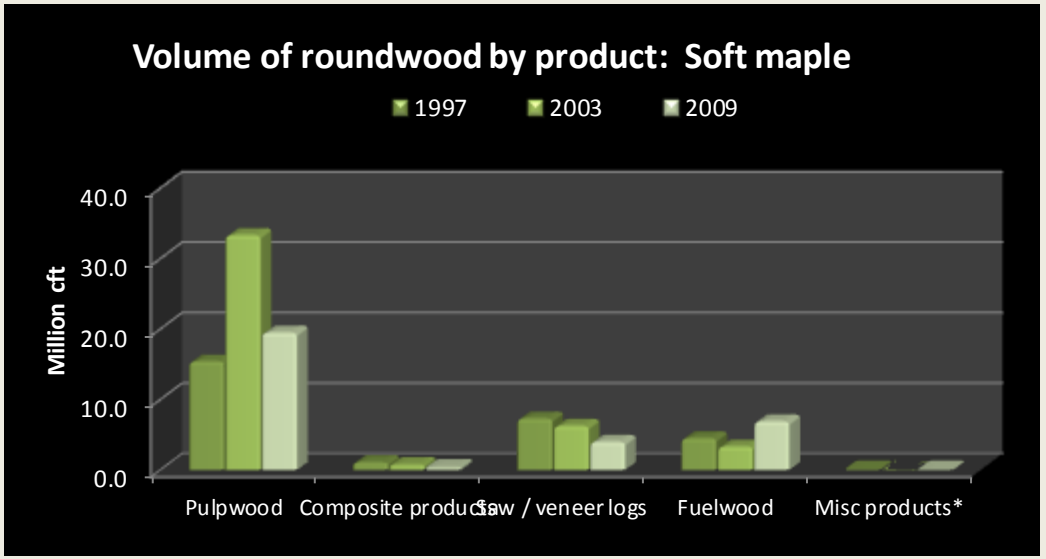


Chart 6. Volume of roundwood products. * Miscellaneous products include poles, posts, and pilings.
Source: Ronald Piva, USDA Forest Service, Northern Research Station, St. Paul MN

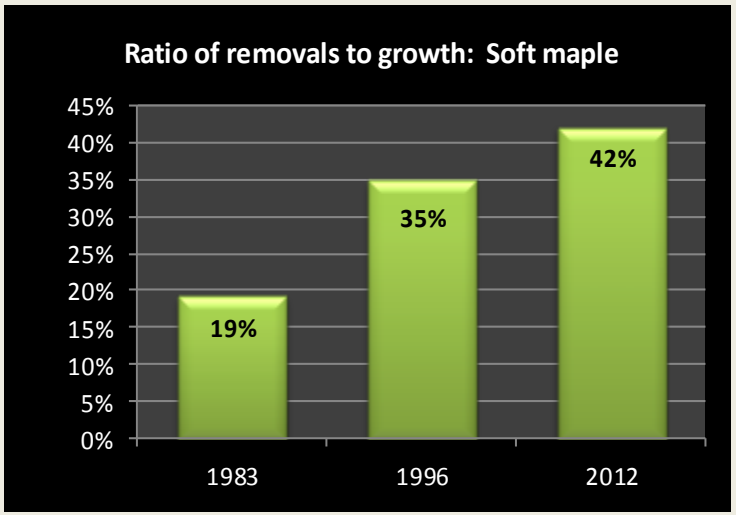


Chart 7. Ratio of volume harvested annually to net growth.
Source: USDA Forest Inventory & Analysis data: 1983, 1996, and 2012.

Removals of soft maple were 31.6 million cft per year from 2008 to 2012 and 94% of this was red maple.

The ratio of removals to growth for soft maple is 42%, much lower than the average of 55.3% for all species in the state. Removals increased but not as much as growth rates.

For a table of **Average annual growth, mortality and removals by region** go to:
http://dnr.wi.gov/topic/ForestBusinesses/documents/tables/GrowthMortalityRemovals.pdf

"How much is soft maple selling for?"

Prices for pulpwood & sawtimber: 2000 to present

Due to the variability of timber prices from year to year and region to region, two methods of reporting prices are presented here: Timber Mart North (Chart 8) and weighted average stumpage prices from Wisconsin Administrative Code Chapter NR 46 (Table 4).

Sawtimber and cordwood prices, as reported both in the Timber Mart North and NR46, have varied over the last 8 years.

Cordwood and log prices have fallen in the last 2-3 years. Prices are slightly above average.

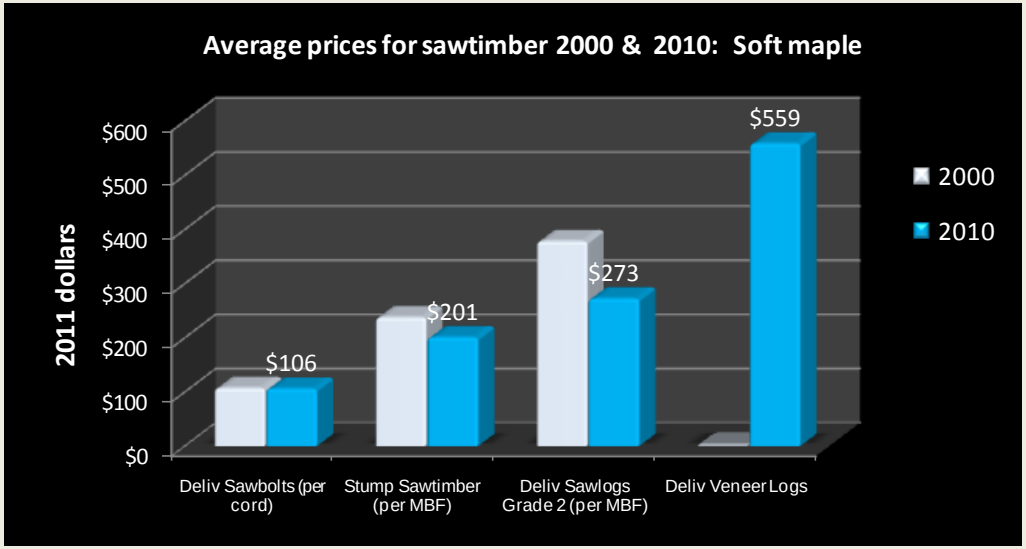
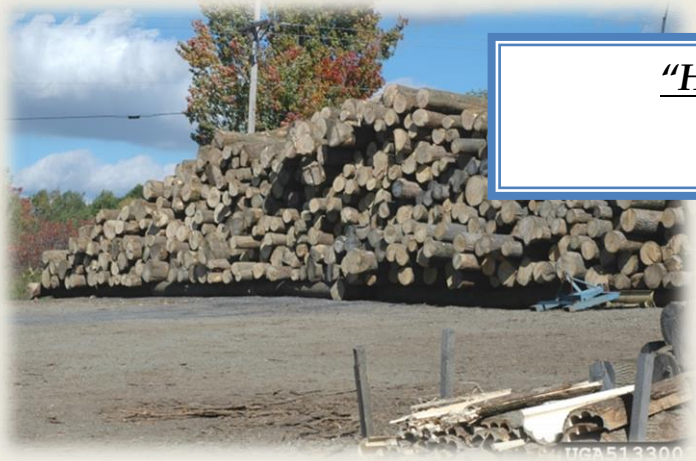


Chart 8. Average prices for cordwood and sawtimber (2008).
Source: Timber Mart North, George Banzhaf & Company, 8301 N. Allen Lane, Milwaukee, WI 53217

Table 4. Average weighted stumpage prices (adjusted for inflation to 2012 dollars) by year for Wisconsin.

Product	2002	2003	2004	2005	2006	2008	2008	2009	2012	Average for all hardwoods
Cordwood (per cord)	$21	$23	$30	$45	$49	$39	NA	$25	**$24**	$19
Logs (per MBF)	$144	$187	$186	$220	$258	$276	$174	$142	**$144**	$140

Source: Wisconsin Administrative Code Chapter NR46, 2000 to 2012



"How much soft maple biomass do we have?"

Aboveground carbon by region of the state

There were 77.8 million short tons of aboveground biomass in live soft maple trees in 2012, an increase of 70% since 1983. This is equivalent to approximately 39 million tons of carbon and represents 12.6% of all aboveground biomass statewide. As with volume, most soft maple is located in central and northern Wisconsin (Chart 9).

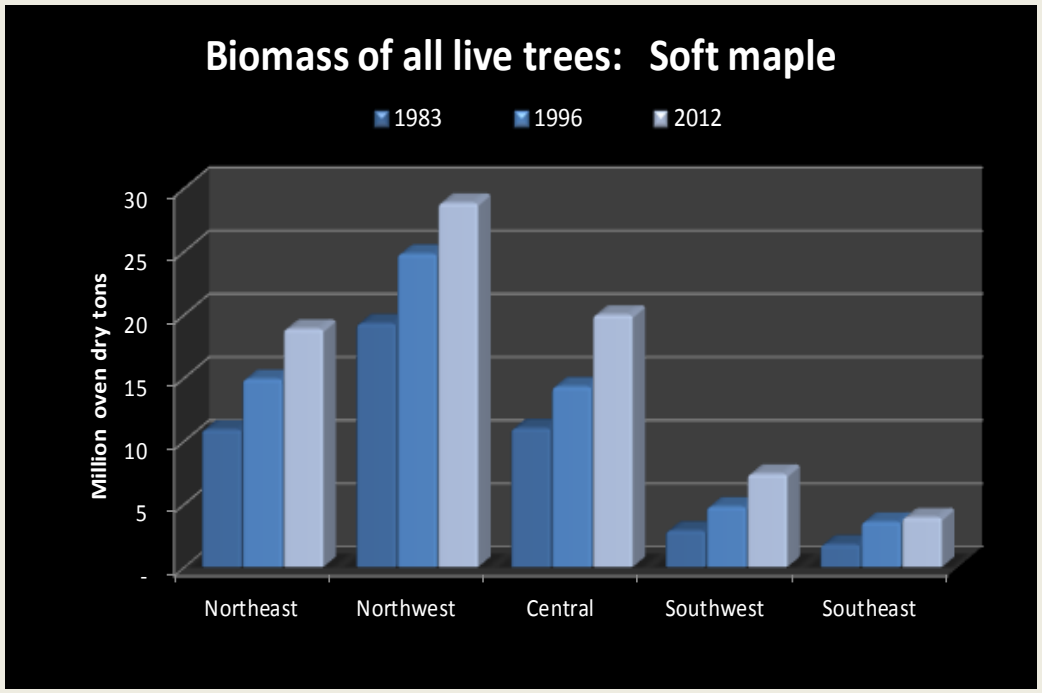


Chart 9. Biomass (above ground dry weight of live trees >1 in dbh, short tons) by year and region of the state.
Source: USDA Forest Inventory & Analysis data: 1983, 1996, and 2012

The density of soft maple wood is slightly lower than average for hardwoods with a ratio of biomass to volume of 48.4 oven-dry lbs. per cubic foot (ODP/cft). The average for all hardwoods is about 50.1 ODP/cft and for all species is 46.8 ODP/cft.

Approximately, 74% of all soft maple biomass is located in the main stem and 22% in the branches.

For a table of **Biomass by County for 2012** go to:
http://dnr.wi.gov/topic/ForestBusinesses/documents/tables/BiomassByCounty.pdf